

## CASE REPORT

# IF THE MIND DOESN'T KNOW, THE EYES CANNOT SEE: A CASE REPORT OF LOCALIZED TETANUS

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### Abstract:

*Tetanus is a vaccine-preventable disease caused by a potent neurotoxin released by an obligate anaerobic bacterium, Clostridium tetani infection. Presentations of tetanus include generalized tetanus, neonatal tetanus, cephalic tetanus, and localized tetanus, the latter two being much rarer. This is a case report of localized tetanus involving the facial muscle in the form of lock jaw in 63-year inadequately immunized gentleman following an unhygienic tooth extraction from rural area. The condition deteriorated further, and the patient was under ventilatory support for 3days. The patient had antibiotics, antitetanus serum, sedatives, and wound care. The case is reported because of the rarity of localized tetanus, the diagnostic dilemma presented by the case, and the cultural interplay and understanding of the disease process by the patient/caregivers. It is also reported to highlight the gap in routine immunization and the need for booster doses in this age group. Successful management includes prompt diagnosis, neutralization of circulating toxin and elimination of C. tetani infection, control of spasms, maintenance of the airway, and management of respiratory failure and autonomic dysfunction.*

**Key words:** neurotoxin, tetanus, lock jaw, Trismus, Local tetanus

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### Introduction:

Tetanus is a severe and potentially fatal infectious disease caused by the bacterium *Clostridium tetani*, which produces the neurotoxin tetanospasmin<sup>1</sup>. While the classical generalized form of the disease is more common and often requires ventilator support, atypical forms such as neonatal, cephalic, and localized tetanus are infrequently reported in clinical practice<sup>2</sup>. Looking into the journals and scientific literature, we can find very few publications on localized tetanus in humans. Despite their rarity, it is essential to recognize these subtypes early for timely diagnosis and treatment.

We present a case of localized tetanus in a 63-year-old male with inadequate immunization status who underwent an unhygienic tooth extraction in a rural area. The patient presented with lockjaw involving the facial muscles, and the diagnosis was initially challenging to establish. However, careful examination and evaluation ultimately confirmed the presence of localized tetanus.

This case report serves as an important reminder to healthcare providers in intensive care units to be aware of the unique features of localized tetanus and consider it a potential diagnosis in patients presenting with clinical manifestations. Early recognition and appropriate management are critical in achieving

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favorable outcomes in patients with this rare subtype of tetanus.

### Case Report:

A 63-year-old hypertensive, non-diabetic Bangladeshi gentleman came to a tertiary care hospital with a sore throat for 10 days associated with odynophagia. After a few days, he started facing difficulties opening his mouth and chewing food. He also complained of non-productive cough for ten days. He had no complaints of excessive salivation, anorexia, nausea, fever, nasal regurgitation of food or nasal voice. Suddenly he developed severe shortness of breath, and oxygen saturation was falling, for which he got hospitalized. As a child, the patient had received a complete immunization program but had no further boosters. Furthermore, he did not give any history of ingestion of poisonous substances or any alternative medications.

On admission, the patient was ill-looking, dyspnoeic with average build, pulse was 78 beats/minute, blood pressure 160/90 mm of Hg; respiratory rate was 26 breaths/minute, SPO<sub>2</sub> was 80% in room atmosphere; GCS score was 15/15. He had widespread coarse crepitations on chest auscultation. He was then given 4-5L oxygen, after which his saturation increased to 96%. On complete neurological examination, no abnormality was detected, including intact cranial nerves.

The complete blood count result showed slight leukocytosis (14.42 K/uL), and CRP and CPK were slightly raised. CPK was 836g/dL and CRP was 184 mg/L. The Blood culture and sensitivity yielded no growth; cerebrospinal fluid analysis was not suggestive of bacterial meningitis; serum electrolytes, urea, and creatinine, as well as serum calcium, magnesium, and phosphate, were normal.

To manage the patient, a multidisciplinary admission team was formed involving a Medicine specialist, Otolaryngologist, oral and maxillofacial surgeon, psychiatrist, and critical care medicine specialist. One day later, his saturation had drastically dropped to 35%, and he had to be intubated. He was on life support for three days. After extubation, he was hemodynamically stable with minimum oxygen support (99% with 2L oxygen), but the patient had difficulty in speech, and the previous complaints of difficulty in opening his mouth and sore throat were still persistent. Again, the multidisciplinary team reviewed the patient once again, and then on a query, we found that the patient had a history of tooth extraction 2.5 months back from a local non-registered dentist in a rural village. On further examination, it

was found that he had trismus and rigidity of the muscles of the face and neck, which was initially missed. There were no apparent spasms in other parts of the body.

Given spasmodic contractions localized mainly on the face, a diagnosis of localized tetanus was made, and immediately human tetanus immunoglobulins, 3000 IU IM, were given to the patient to neutralize the circulating toxins along with the administration of tetanus toxoid (TT). For muscle spasms, a diazepam infusion of 1 mg/kg/day was given, with which his spasm subsided and was tapered within three days and switched to the oral form. He did not have any further worsening.

Here, localized tetanus was diagnosed in this patient based on repeated clinical examination and the retrograde method of exclusion. After ruling out other possible causes of the patient's symptoms and finding of normal results from previous investigations, the diagnosis of localized tetanus was being considered by finding the trismus and the supportive history. The diagnosis was indirectly confirmed by administering tetanus immunoglobulin and tetanus toxoid to which the patient responded well. He was discharged after a week in good health and no residual deficits were detected during follow-up. Prompt diagnosis and treatment of tetanus are crucial to prevent severe complications and ensure a positive outcome for the patient.

### Discussion:

*Clostridium tetani* is an anaerobic bacterium commonly found in soil and the gastrointestinal tracts of mammals, and it produces the potent neurotoxin tetanospasmin. The incubation period for tetanus typically ranges from 3 to 21 days, with an average of 10 days. Tetanospasmin exerts its effects by blocking the release of the inhibitory neurotransmitter  $\gamma$  aminobutyric acid, resulting in violent spastic paralysis<sup>3</sup>.

Although national immunization programs have successfully reduced the incidence of tetanus in developed countries, there are still cases with non-specific prodromal symptoms that can progress to generalized tetanus. Localized tetanus is a rare subtype, with only a few cases reported in the literature over the past decade<sup>2,4</sup>. Diagnosing tetanus is primarily clinical, but distinguishing between localized and other forms of the disease can be challenging, especially when the presentation is atypical. The former involves muscle spasms limited to specific body areas with generally good outcomes. However, rare cases go on to involve vital structures

such as the cranial nerves leading to cephalic tetanus and increasing the risk of developing generalized tetanus with high mortality rates<sup>5</sup>.

However, a case of localized or cephalic tetanus has a varied presentation and may be difficult to distinguish from a local disorder involving the joints or a hysterical disorder<sup>2</sup>. Cephalic tetanus commonly follows craniofacial injuries<sup>6</sup>, as with our patients. Dong Hyuk Seo et al. reported a case report of cephalic tetanus in 64 years old lady who presented to the hospital with ptosis, facial nerve palsy, and trismus after a forehead abrasion injury after a road traffic accident<sup>7</sup>. Similarly, our patient had a history of facial and dental injury following unhygienic tooth extraction in a rural area and developed localized tetanus. The patient presented with lockjaw involving the facial muscles, which made the diagnosis challenging initially. However, careful evaluation ultimately confirmed the presence of localized tetanus. Likewise, Bassey GO et al.<sup>8</sup> and Ajayi EA<sup>9</sup> reported different case reports of localized tetanus after tooth extraction.

Localized tetanus has a generally good prognosis, but aggressive management is required to prevent progression to generalized tetanus. About two-thirds of cephalic tetanus cases progress to generalized tetanus with bad prognosis<sup>10</sup>. The prognosis is good for those who do not progress to generalized tetanus. However, our patient did not progress to generalized tetanus, with a good outcome, probably, due to prompt intervention.

Treatment principles include neutralizing the toxin with tetanus immunoglobulin and wound debridement, with metronidazole being the antibiotic of choice. However, caution is advised when using penicillin, as it may exacerbate spasms. Complete primary immunization is recommended for all patients with tetanus to ensure adequate immunity<sup>11</sup>. Our patient responded well after administering tetanus immunoglobulin, tetanus toxoid and diazepam. A retrospective analysis done in 2001 by Kakou et al. showed a cure rate of 82% with 16% mortality in 37 cases reported of tetanus in the last 22 years<sup>2</sup>.

### Conclusion:

In conclusion, this case highlights the significance of maintaining a broad perspective while managing patients in today's interconnected world. Obtaining a detailed medical history, including information on prior treatments, occupation, recent travel, and exposure to materials, can provide valuable insights in situations where clinical manifestations are atypical. As such, clinicians must remain vigilant and

consider all possibilities to make an accurate diagnosis and provide appropriate care.

### Conflict of Interest:

The authors stated that there is no conflict of interest in this study

### References:

1. Afshar M, Raju M, Ansell D, Bleck TP. Narrative review: tetanus-a health threat after natural disasters in developing countries. *Annals of internal medicine*. 2011 Mar 1;154(5):329-35. <https://doi.org/10.7326/0003-4819-154-5-201103010-00007> PMID:21357910
2. Gupta V, Dewangan S, Dev Bhatia B. Localised tetanus: rare presentation of a 'forgotten' disease. *Journal of Paediatrics and Child Health*. 2011 Mar;47(3):152-. <https://doi.org/10.1111/j.1440-1754.2011.02007.x> PMID:21401777
3. Sharma DS, Shah MB. A rare case of localized tetanus. *Indian Journal of Critical Care Medicine: Peer-reviewed, Official Publication of Indian Society of Critical Care Medicine*. 2018 Sep;22(9):678. [https://doi.org/10.4103/ijccm.IJCCM\\_182\\_18](https://doi.org/10.4103/ijccm.IJCCM_182_18) PMID:30294137 PMCID:PMC6161583
4. Kakou AR, Eholie S, Ehui E, Ble O, Bissagnene E, Aoussi E, Odehouri K, Kadio A. Localized tetanus in Abidjan: clinical and prognostic features (1976-1997). *Bulletin de la Societe de Pathologie Exotique* (1990). 2001 Nov 1;94(4):308-11.
5. Gulamhussein MA, Li Y, Guha A. Localized tetanus in an adult patient: case report. *Journal of Orthopaedic Case Reports*. 2016 Sep;6(4):100.
6. Ogun OA, Ashaye AO, Ola SO. Cephalic tetanus: case report of a rare complication of orbito-ocular injury in a Nigerian. *Nigerian Journal of Ophthalmology*. 2005 Oct 24;13(1):32-5. <https://doi.org/10.4314/njo.v13i1.11965>
7. Seo DH, Cho DK, Kwon HC, Kim TU. A case of cephalic tetanus with unilateral ptosis and facial palsy. *Annals of Rehabilitation Medicine*. 2012 Feb 29;36(1):167-70. <https://doi.org/10.5535/arm.2012.36.1.167> PMID:22506253 PMCID:PMC3309317
8. Bassey GO, Anyanечи CE, Osunde OD. Tetanus infection following dental extraction: a case report. *Cross River J. Med*. 2018;2(1).
9. Ajayi EA, Obimakinde OS. Cephalic tetanus following tooth extraction in a Nigerian woman. *Journal of Neurosciences in Rural Practice*. 2011 Jul;2(02):201-2. <https://doi.org/10.4103/0976-3147.83597> PMID:21897694 PMCID:PMC3159367
10. Alhaji MA, Abdulhafiz U, Atuanya CI, Bukar FL. Cephalic tetanus: a case report. *Case Reports in Infectious Diseases*. 2011 Sep 22;2011. <https://doi.org/10.1155/2011/780209> PMID:22567477 PMCID:PMC3336234
11. Louise Thwaites C, Yen LM. Tetanus. In: Kasper DL, editor. *Harrison's Principles of Internal Medicine*. 19th ed. New Delhi: McGraw Hill Education; 2015. p. 984-6.